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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,953	09/30/2003	Ting Li	P0284US-7	8135
23935	7590	11/03/2004	EXAMINER	
KOPPEL, JACOBS, PATRICK & HEYBL 555 ST. CHARLES DRIVE SUITE 107 THOUSAND OAKS, CA 91360			TRAN, MINH LOAN	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,953

Applicant(s)

LI ET AL.

Examiner

Minh-Loan T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
4a) Of the above claim(s) 12-24 is/are withdrawn from consideration.
5) ☒ Claim(s) 25-27 is/are allowed.
6) ☒ Claim(s) 1,2,6,11 and 28 is/are rejected.
7) ☒ Claim(s) 3-5,7-10 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/27/04 & 2/4/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-21 and 25-28 in the reply filed on 08/16/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Further, in the previous restriction/election requirement, examiner made a mistake when grouping the claims. Actually, Group I, drawn to a light emitter, includes claims 1-11 and 25-28; Group II, drawn to an apparatus and method of making a semiconductor device, includes claims 12-24. Therefore, the device of group I, claims 1-11 and 25-28, has been elected for prosecution. Claims 12-24 have been withdrawn from further consideration as being drawn to a nonelected invention.

Information Disclosure Statement

2. The information disclosure statements filed 02/27/04 and 02/04/04 have been considered.

Oath/Declaration

3. The oath or declaration filed on 09/30/2003 is acceptable.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the emission region comprises an active layer sandwiched between two oppositely doped layers as recited in claims 2 and 26; the porous layers on a plurality of semiconductor layers as recited in

claim 28 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 5 and 6 are objected to because of the following informalities:

In claim 5, lines 2 and 3, "light **emitting** region" should be changed to –light **emission** region—for being consistent with claim 1.

In claim 6, line 2, "light **emitting** region" should be changed to –light **emission** region—for being consistent with claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification does not disclose a plurality of porous layers formed on a plurality of semiconductor layers as recited in claim 28. Note that the specification and the drawings disclose only one porous layer formed on a substrate.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 11 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurtz et al. (6,225,647).

With regard to claims 1 and 11, Figure 3C of Kurtz et al. discloses a light emitter 30 comprising a SiC substrate 32 having a porous layer 34, a semiconductor emission

region (an interface between the n-type layer 36 and the p-type substrate 32) formed on the substrate 32, wherein the emission region capable of emitting light omnidirectionally in response to a bias that applied to the electrodes 38 and 18 (rear electrode) and the porous layer 34 enhancing extraction of the emitted light that passing through the substrate 32 (line 1 in column 5 of Kurtz et al.)

With regard to claim 28, figure 3C of Kurtz et al. discloses a light emitter 30 comprising a semiconductor emitter having a plurality of layers 32, 36; the emitter capable of emitting light omnidirectionally in response to a bias that applied to the electrodes 38 and 18 (rear electrode); the porous layer 34 formed on the layer 32 for enhancing extraction of the emitted light from the light emitter (line 1 in column 5 of Kurtz et al.)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurtz et al. (6,225,647).

With regard to claim 2, figure 3C of Kurtz et al. does not disclose the emission region comprises an active layer sandwiched between two oppositely doped layers. However, it would have been obvious to one of ordinary skill in the art to replace the

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n-type layer 36 of Kurtz et al. with the emission region comprises an active layer sandwiched between two oppositely doped layers, because such structure is conventional in the art for forming the heterojunction light emitting diode.

With regard to claim 6, figure 3C of Kurtz et al. does not disclose the substrate and the emission region are encased in a protective epoxy. However, it would have been obvious to one of ordinary skill in the art to encapsulate the substrate and the emission region in a protective epoxy because such structure is conventional in the art for protecting the light emitting diode from the environment.

Allowable Subject Matter

9. Claim 25-27 are allowed.

Claims 25-27 are allowable over the references of record because none of these references disclose or can be combined to yield the claimed invention such as a substrate having a porous layer on one surface; an emission region formed on the substrate on a surface opposite the porous layer; the LED flip-chip mounted to the metal layers with the substrate being the primary emission surface of the LED as recited in claim 25.

10. Claims 3-5, 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh-Loan T. Tran whose telephone number is (571)


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272-1922. The examiner can normally be reached on Monday-Friday 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mlt



Minh-Loan T. Tran
Primary Examiner
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